**IT Applications Unit 3, AOS 1, Online Communities**

Complete the following, from pgs, 28- 32: **Transmission media**

**Networks are classified according to below and we will study the following:**

* Network Categories: LAN, WAN
* Network Architecture, client-server; peer-to-peer; internet peer-to-peer; intranet
* Network communication standards
* Network hardware and software
* Transmission media
* Network security

**Transmission media**

**Physical Transmission**

**Twisted – pair cable**

1. **What is twisted pair cable?**

Twisted-pair cabling has eight wires twisted in four separate pairs.

1. **Why do new networks use CAT 5E or CAT 6 rather than CAT 3?**

Networks use CAT 5Eor CAT6 rather than CAT 3 because they

1. **What are some disadvantages of CAT 5E and why is it used in so many installations?**

* can support 1Gb of data transmission over short distances
* max distance 100m

1. **What type of networks is this cable largely used in?**

The twisted-pair cable is largely used in star networks.

**Coaxial Cable**

1. **Describe the characteristics of this cable**

Coaxial cable contains two wires. The inner wire is surrounded by insulation, followed by a copper braid (sometimes aluminium, tin or lead foil), and finally another layer of insulation.

1. **What network is it used in?**

Coaxial cables are used in bus networks, where data travels in both directions.

**Fibre-optic cable**

1. **Describe the characteristics of this cable**

Fibre optic cabling consists of a glass or plastic strands that transmit light pulses. The cable can reliably transmit data up to 2km without interference.

1. **Why is fibre optic cabling often used to connect major switches inside buildings as well as between buildings?**

Fibre optic cables have a greater bandwidth than other metal cables. This means that they can carry more data. Fibre optic cables are less susceptible than metal cables to interference. Fibre optic cabling is much thinner and lighter than metal cables.

1. **What are the disadvantages of this cable?**

Fibre-optic cabling is expensive to install and is more fragile than other wire cables.

**Wireless Transmission**

**Radio Waves**

1. **What is required for radio transmissions to occur?**

For radio transmissions to occur, a transmitter is needed to broadcast the radio signal and a receiver needs to accept it.

1. **Wi-Fi networks use radio waves. What are its advantages over a cable network and what are its disadvantages?**

**Advantages**

* accessed from within a given range
* no wires needed

**Disadvantages**

* Slower that cable connection

1. **Describe the characteristics of Bluetooth.**

Bluetooth is a standard that uses short-range radio waves to transmit data over a distance of up to 10 meters. Bluetooth has a transfer rate of 2Mbps which is marginally slower than other wireless transmissions.

**Microwaves**

1. **Describe the characteristics of microwave transmission**

Microwave transmission requires line-of-sight transmission, where there is no obstruction between the sending and receiving dish.

1. **What are the limitations of microwave transmission?**

* requires line-of-sight transmission
* short distances

**Satellite**

1. **Satellite transmission can be in what forms?**

Satellite transmission can be in the forms of radio waves or microwaves.

1. **What are the limitations of this form of transmission?**

The biggest limitation of this form of transmission is the distance the waves have to travel to the satellite and back to the Earth station.

1. **Who might use this form of transmission?**

Satellite transmission is used for television broadcasts, video conferencing, global positioning systems (GPS) and internet connections.

**Infra-red**

1. **Describe the characteristics of infra-red transmission**

Infra red transmission uses the same technology as the TV and video remote controls. It is usually quite effective over short distances although the transfer rate is slow compared to using cables. Infra red transmission uses light waves and requires line of sight access.

1. **Why is radio wireless networking preferable to infra-red wireless networking?**

Infra-red transmission uses light waves and requires line of sight. It is also only effective for up to five meters.